REMARKS/ARGUMENTS

In the Office Action dated April 25, 2006, the Examiner rejected claims 1 – 22. In this response, claims 1, 19 and 22 have been amended to recite a particular level of selectivity for the product 4,4'-diisopropylbiphenyl and to correct a typographical error which resulted in the inadvertent appearance of the word "steam" in claims 1, 19, and 22 instead of the intended ---stream---. Ample antecedent basis for the amendment of claims 1, 19 and 22 to recite a selectivity of at least 70 percent may be found in the experimental results provided in Table 1 on page 14 of the application. No new matter has been added.

Claim Rejections under 35 USC 103 (a)

(I) The Examiner rejected claims 1 – 4, and 7-16 under 35 USC 103(a) as being unpatentable over Nakamura (US Pat. 4,982,037) in view of Lee (US Pat. 5,015,797). The Examiner rejected claims 5, 6, 17 and 18 under 35 USC 103(a) as being unpatentable over Nakamura in view of Lee and further in view of Holtermann (US Pat. 5,149, 894). Claims 19-22 were rejected 18 under 35 USC 103(a) as being unpatentable over Nakamura in view of Lee and further in view of Holtermann. The Applicants courteously traverse these rejections and urge that especially as amended, claims 1, 19 and 22 recite patentable subject matter as do all claims dependent thereon.

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d

488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP Section 2143 - Section 2143.03

With respect to the rejection of 1 – 4, and 7-16 , the Applicants urge that the Examiner has failed to establish a prima facie case of obviousness. For example, in the present instance, in order to establish prima facie obviousness to support the rejection of claims 1 – 4, and 7-16, all of the claim limitations must be taught or suggested by the combination of the Nakamura and the Lee references. It is the Applicants' position that no combination of the Nakamura and Lee references can be read to disclose or suggest all of the claim limitations of claim 1 of the instant invention. This can be demonstrated by reviewing the elements (limitations) of claim 1 and comparing them to each of the Nakamura and Lee references in turn.

The Examiner asserts that Nakamura teaches various elements of Applicants' claim 1, but acknowledges that Nakamura does not disclose the reaction being "continuous and that the feed is contacted with at least one inert solvent and an inert diluent gas". The Examiner invokes the Lee reference to provide the missing elements of a diluent gas, an inert solvent and the continuousness of the process. A process can be said to be "continuous" only where reagents are added to a flow-type reactor while simultaneously withdrawing a product stream from the reactor. The Applicants' claim 1 addresses the continuousness of the process using the expressions "continuously contacting in a flow reactor" and "continuously recovering an effluent stream comprising product 4,4'-diisopropylbiphenyl".

A review of the Lee reference indicates that though the at least one inert solvent and the inert diluent gas is mentioned in the reference, Lee does not disclose a continuous process for the preparation of 4,4'-diisopropylbiphenyl. In column 15, lines 55-56 and column 16, lines 4-8, the Lee reference teaches that the alkylating agent may be introduced to the reaction on demand until the desired degree of conversion is achieved or may be continuously fed into the reactor. Continuously fed into the reactor, however, refers to a staged addition of a reactant to a batch reactor. Lee does not disclose a

continuous process in which reactants are added while simultaneously removing products. While the Lee reference may be read to suggest the addition of one of the reactants to a batch reactor over the course of a reaction, Lee does not disclose the step of continuously recovering an effluent stream comprising the product, solvent and inert diluent gas. No combination of Nakamura and Lee can be read to disclose a method for the preparation of 4,4'-diisopropylbiphenyl in a flow reactor which involves continuously contacting in a flow reactor (i) biphenyl, (ii) at least one inert solvent, (iii) propene, and (iv) an inert diluent gas, with at least one solid acidic catalyst and continuously recovering an effluent stream comprising product 4,4'-diisopropylbiphenyl, inert solvent, and inert diluent gas.

Those skilled in the art will appreciate the difference between an addition of a reactant continuously to a batch reactor (as in Lee) and the continuous process of the instant invention which comprises adding the reactants continuously into a flow reactor containing a catalyst and continuously recovering an effluent stream comprising the product.

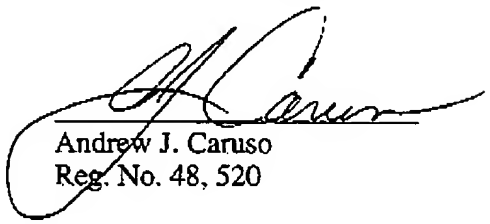
With respect to the rejection of claims 5, 6, 17 and 18, the Holtermann reference recognizes in column 22 lines 22-26 that the chemistry of benzene alkylation is sensitive to the type of reactor used and also the type of catalyst used, and teaches the unpredictable nature of aromatic alkylation. Holtermann discloses a continuous process for the alkylation of aromatic compounds and at (column 9, line 40) names biphenyl as being a suitable feedstock for the reaction. Holtermann provides no experimental data for the alkylation of biphenyl, and is silent with respect to the newly added limitation that the product 4,4'-diisopropylbiphenyl be produced with a selectivity of at least 70 percent. Thus, although the Holtermann reference might be read to disclose a continuous process for the alkylation of biphenyl it cannot be said to furnish all of the missing elements needed to establish a prima facie case of obviousness. In addition, one skilled in the art would have no basis for forming a reasonable expectation of successfully producing the product 4,4'-diisopropylbiphenyl with a selectivity of at least 70 percent.

With respect to the rejection of claims 19-22, the Applicants stress that because Holtermann is silent with respect to the newly added limitation that the product 4,4'-diisopropylbiphenyl be produced with a selectivity of at least 70 percent (in the context of a continuous process for the production of 4,4'-diisopropylbiphenyl), Holtermann cannot furnish all of the missing elements needed to establish a prima facie case of obviousness. In addition, one skilled in the art would have no basis for forming a reasonable expectation of successfully producing the product 4,4'-diisopropylbiphenyl with a selectivity of at least 70 percent.

The Applicants urge that the claims of the instant invention, especially as amended, recite patentable subject matter over the combined teachings of Nakamura and Lee, and over the combined teachings of Nakamura, Lee and Holtermann. The Applicants thus respectfully request that the rejection of claims 1 – 4, and 7-16 under 35 USC 103(a) as being unpatentable over Nakamura in view of Lee be withdrawn. The Applicants further request that the rejection of claims 5, 6, 17 and 18 under 35 USC 103(a) as being unpatentable over Nakamura in view of Lee and further in view of Holtermann be withdrawn. Lastly, the Applicants respectfully request that the rejection of claims 19-22 under 35 USC 103(a) as being unpatentable over Nakamura in view of Lee and further in view of Holtermann be withdrawn

In view of the foregoing arguments and amendments the Applicants courteously solicit a prompt allowance of claims 1-22 . Should the need arise, the Examiner is respectfully requested to contact the Applicant's representative at the telephone number listed below.

Respectfully submitted,



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